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ABSTRACT

This study of 1,093 public high school students was designed to test an integrated theoretical model of delinquency, consisting of elements of social control and social learning theories, with LISREL procedures. The model confirmed with LISREL was very similar to the hypothesized model. The hypothesized model was fitted to data on one random sample taken from the original sample and then confirmed in a separate random sample of respondents. The confirmed model showed a co-variant relationship between attachment to parents and religion, and each of these elements of bonding had a positive relationship to conventional beliefs. Conventional beliefs had an inverse relationship to differential association with delinquent peers, as well as to frequency of delinquent behavior. Modeling peer delinquent behavior increased delinquency, as did excuses for crime, and these excuses had a reciprocal relationship with perception of the rewards of delinquency. Theoretical and practice implications of the study were discussed. An appendix lists delinquency scales. (Contains 84 references, 4 tables, and 2 figures.) (Author)

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Structural Equation Model of Adolescent Delinquency

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Abstract

This study of 1,093 public high school students was designed to test an integrated theoretical model of delinquency, consisting of elements of social control and social learning theories, with LISREL procedures. The model confirmed with LISREL was very similar to the hypothesized model. The hypothesized model was fitted to data in one ramdom sample taken from the original sample, and then confirmed in a separate random sample of respondents. The confirmed model showed a co-variant relationship between attachment to parents and religion, and each of these elements of bonding had a positive relationship to conventional beliefs. Conventional beliefs had an inverse relationship to differential association with delinquent peers, as well as to frequency of delinquent behavior. Modeling peer delinquent behavior increased delinquency, as did excuses for crime, and these excuses had a reciprocal relationship with perception of the rewards of delinquency. Theoretical and practice implications of the study were discussed.

Testing an Integrated Model

Introduction

Three decades ago Matza (1964) characterized the literature on theories of juvenile delinquency as an "embarrassment of riches" in reaction to the vast array of theoretical formulations that have been presented, in contrast to the paucity of empirical evidence that clearly supported certain theories and disconfirmed others. In the ensuing years since Matza made that scientific observation, there has been an enormous volume of quantitative research to test those theories (see reviews, Akers, 1994; Elliott, Huizinga & Ageton, 1985; Empey & Stafford, 1991; Gibbons & Krohn, 1991; Kornhauser, 1978; Nettler, 1984; Shoemaker, 1990). And yet, Bernard (1990) recently concluded that there has been no substantial progress in falsifying the criminological theories that existed 20 years ago.

The failure to accumulate verified knowledge in the context of criminological theories can be attributed, in part, to the difficulty in operationalizing many concepts embedded in the major theoretical frameworks (see Akers, 1994; Gibbons & Krohn, 1991; Gove, 1980; Nettler, 1984; Shoemaker, 1990). Also, these theories typically have been tested in separate studies of a single theory (e.g., Agnew, 1991a; Akers, 1992; Brownfield & Sorenson, 1991; Marcos & Bahr, 1988). Studies of single theories generally find at least modest support for the theory under investigation, suggesting that there is some truth in all of the major theories of delinquency (see reviews, Akers, 1994; Bartollas, 1993; Empey & Stafford, 1991; Trojanowicz & Morash, 1992).

Another approach to testing these theories involves examining

integrative theoretical models that provide a fuller explanation of delinquent behavior than any single theory (see Agnew, 1991b, 1993; Elliott et al., 1985; McGee, 1992; Simons, Whitbeck, Conger & Conger, 1991: Thornberry, Krohn, Lizotte & Chard-Wierschem, 1993). Especially when these models are composed of a parsimonious number of theoretical elements that are easily operationalized, broad in scope, and useful in guiding intervention, this approach offers more promise of knowledge acculumation than does the piecemeal testing of single theories (Akers, 1994). Not only do these integrative models explain more variance in adolescent behavior than do single theories, they also are beginning to fill gaps in explanations provided by these theories (see Blalock, 1969; Kaplan, 1964; Popper, 1968). The most commonly used theories of delinquency in model construction are social control (e.g., Hirschi, 1969), social learning (e.g., Akers, 1985), and differential association (Sutherland & Cressey, 1978) theories because of their empirical support, parsimony, explanatory scope, and usefulness to intervention (see Akers, 1994; Bartollas, 1993; Empey & Stafford, 1991; Trojanowicz & Morash, 1992).

Theoretical Undergirding for the Hypothesized Model

The purpose of the present study was to examine a hypothesized integrated theoretical model to determine how well it explained variance in frequency of current delinquency among adolescents. The hypothesized model represented an integration of elements or concepts from social control (Durkheim, 1951; Hirschi, 1969) and social learning (Akers, 1985) theories, and was formulated

based on prior conceptual and empirical work (e.g., Agnew, 1991b, 1993; Akers, 1994; Akers, Krohn, Lanza-Kaduce & Radosevich, 1979; Elliott et al., 1985; Gibbons & Krohn, 1991; Jessor & Jessor, 1977; Kaplan, Johnson & Bailey, 1988; McGee, 1992; Matsueda & Heimer, 1987; Simons et al., 1991; Thornberry, 1987; Thornberry, Lizotte, Krohn, Farmworth & Jang, 1991; Thornberry et al., 1993).

Figure 1 about here

Specifically, the hypothesized model, shown in Figure 1, indicates that bonding or social control elements occur before social learning processes involved in differential peer association and impacts delinquency mostly through their influence on those processes. Bonding is composed of elements deemed essential to controlling natural delinquent impulses by Hirschi (1969) as well as religion (see Durkheim, 1951). The Hirschi version is the preeminent control theory, having received the most research attention and support in the ensuing years since its formulation (see reviews, Agnew, 1991b, 1993; Akers, 1994; Empey & Stafford, 1991; Gibbons & Krohn, 1991; Kornhauser, 1978; Shoemaker, 1990). Hirschi posits that attachment to parents is the primary element of bonding, and is an empathic identification with them that fosters acceptance of parental commitments to and beliefs in conventional behavior and norms. He postulates that it is the parents' psychological presence in their child's mind during tempting situations that is key to controlling natural delinquent impulses (see Hirschi, 1969: 89 & 90). By natural impulses, Hirschi means that humans would grow up "naturally," with defective socialization, delinquent, or like weeds,

rather than biological positivism (see Nettler, 1984: 313).

It is this personal or inner aspect of bonding that is often overlooked in scholarly work on Hirschi's theory because of the emphasis on social bonding among sociologists (see Cernkovich & Giordano, 1987). However, Hirschi (1969: 100) is clear that personal attachment to parents is the primary element of bonding that forms the basis for later social bonding. In fact, recently Hirschi has turned his attention away from the classic social bonding formulation of control theory to self-control theory in collaboration with Michael Gottfredson (Gottfredson & Hirschi, 1990; Hirschi & Gottfredson, 1993). This self-control theory is conceptually more congruent with the personal (Reiss, 1951) or internal (Nye, 1958; Reckless, 1961) controls identified in earlier versions of control theory. However, due to the present measurement problems (see Akers, 1994; Hirschi & Gottfredson, 1993), self-control was not examined in the present study. Instead, the study is of personal bonding originally posited by Hirschi (1969: 100).

Furthermore, the hypothesized model (see Figure 1) reflects conceptual revisions of Hirschi's (1969) theory based on consistencies in findings indicated in the empirical literature and on diagnostic analyses performed on data in the present study. Indeed, a major revision is the omission of the elements of bonding of commitment and involvement and the addition of religion. Most longitudinal research as well as many cross-sectional studies find that commitment to and involvement in conventional activities, commonly theorized to be products of parental attachment, are

unrelated to delinquency (see reviews, Agnew, 1991b, 1993; Akers, 1994). In fact, it appears that any relationship between these two elements of bonding and delinquency is mediated by attachment to parents (Marcos & Bahr, 1988). Moreover, diagnostic analyses, including factor analyses of items, reliability tests, and item-to-total correlations, revealed that the measures of commitment (i.e., 2 items measuring school and job expectations) and of involvement (i.e., 2 items measuring time spent on homework and in extra-curricular activities) in the present study were unstable.

Another revision of Hirschi's (1969) theory reflected in Figure 1 is the addition of religion. Whereas Hirschi (Hirschi & Stark, 1969) has rejected religion as a critical element of bonding, it is a central concept deeply embedded in the more general theoretical framework (Durkheim, 1951) from which he formulated his version of control theory. Indeed, the restraining and support roles of religion and of the family are classic Durkheimian (1951) themes interlaced throughout social control theory (see Brownfield & Sorenson, 1991). In addition, despite Hirschi and Stark's (1969) finding that church attendance and belief in supernatural sanctions were not associated with self-reported delinquency, most studies since that frequently cited finding have indicated a significant relationship between religion and various forms of delinquency (see reviews, Brownfield & Sorenson, 1991; Cochran & Akers, 1989; Marcos, Bahr & Johnson, 1986).

At the same time, the relationships between elements of bonding and delinquency are modest to moderate in comparison to

those exhibited by elements of social learning theory (see reviews, Agnew, 1991b, 1993; Akers, 1994; Elliott et al., 1985; Gibbons & Krohn, 1991; Matsueda, 1988). Theorists (e.g., Elliott et al, 1985; Gibbons & Krohn, 1991) have interpreted this evidence to mean that bonding is important, not as a direct influence on delinquency, but, rather, in explaining why adolescents differentially associate (Sutherland, 1947) with delinquent peers. Those who are weakly bonded to parents are likely to drift into delinquent peer associations as a substitute for inadequate familial bonding (see Elliott et al., 1985; Patterson & Dishion, 1985). In other words, bonding is a less proximate (more indirect and distant) influence on delinquency that has its affect mostly through peer association.

Hypothesized Model

Bonding is hypothesized to occur before peer association and to influence that association in Figure 1. Specifically, strong attachment to parents and high commitment to religion are hypothesized to co-vary and to lead to beliefs in the moral validity of societal laws and norms (Durkheim, 1951). Those beliefs, in turn, are hypothesized to reduce delinquency directly, as well as indirectly through peer association. Evidence shows that persons are inclined to adopt beliefs of authorities they esteem such as parental and religious figures (Bandura, 1977). Moreover, D'Antonio, Newman and Wright (1982) review a number of studies showing a symbiotic relationship between religion and attachment to parents, which fosters adoption of conventional beliefs.

Beliefs are the most direct conceptual link between control and

social learning theories (see Akers, 1994), and the most direct inhibitor of both delinquent behavior and associations (Johnson,, Marcos & Bahr, 1987; Marcos, Bahr & Johnson, 1986). According to the principal social learning theorist, differential association with delinquent peers leads to modeling (or imitating) their behavior, to perceptions that the rewards of delinquency outweigh the costs, and to adopting excuses (or rationalizations) for crime (see Akers, 1994: 96). Differential association with delinquent peers provides the social context within which the other 3 social learning processes operate to encourage delinquency. This model is tested with the following methodology.

Methodology

Sample

The present study consisted of 1,093 public high school students, who were evenly distributed across grades 9 through 12. Simple random samples (Smith, 1981) were selected from each of five schools by assigning numbers to student rosters received from the different schools and using a computer generated random sampling program. The entire population of one rural school was included in the study due to its small size of 53 students. In addition to this rural school in Oklahoma, there were two public high schools from Baltimore, Maryland ($n_1 = 217$; $n_2 = 143$), one from Little Rock, Arkansas ($n = 247$), and two from rural areas of Arkansas ($n_1 = 314$; $n_2 = 110$). Except for the one rural school in Oklahoma, where all 53 students were surveyed, respondents represented about one-third of the respective school populations (9 missing cases). The respective

population sizes of the communities were approximately: Baltimore (770,000), Little Rock (240,000), DeQueen (4,600), Horatio (800), and Arkhoma, Oklahoma (2,400). For purposes of this study, Baltimore and Little Rock were considered urban; hence, 56% of the respondents were urban. This survey was conducted in 1992.

Survey questionnaires were distributed to respondents by research assistants, who were present to give instructions and answer questions. Participation was both voluntary and anonymous, and no information was requested that would link responses to respondents. Less than five parents at each school refused their child's participation in the study. Only one variable (i.e., grade level) was missing 5.5 percent of the cases; all others were missing information in less than 3 percent of the cases.

The study consisted of 46% males and 54% females, and the racial composition was 59% white, 36% black, 2% Hispanic, 1.8% Asian and 2% other. Their ages ranged from 13 to 20 years, with an average (mean, mode and median) age of 16 years. There were only 14 persons (1.3%) who were 20 years of age. The largest percentage (45%) of respondents resided with both biological parents, leaving 20% who lived with a step and biological parent, 22.5% who resided with a female single-parent, 3.5% who resided with a male single-parent, and 9% who were in other situations (e.g., foster homes). Male and female parents had almost identical levels of education: 15%, no high school diploma; 38%, high school diploma; 28%, some college; 14%, college graduate; and 5.5%, graduate degree. Most respondents reported that they were Baptist (42%); other significant

percentages included nondenominational Christians (12%), Catholic (7%), Methodist (6%), Adventist (3%), Assembly of God (3%), Pentecostal (2%), and none (13%).

Several of the study participants had experienced treatment for alcohol (3%) and other drug (2%) abuse, had made court appearances for delinquency (14%), had been incarceration in jail (8%), and had attempted suicide (16%). A fourth of those persons reported regular thoughts of suicide, 28 percent used marijuana, and 67 percent were sexually active.

Measures

For each measure, a similar set of preliminary analyses were performed in a simple random sample of 503 persons. First, factor analyses were conducted on items hypothesized to be indicators of each construct (Kim & Mueller, 1978). The maximum likelihood method of factor extraction was chosen because it tends to give better estimates than does principal components analysis with large samples. Principal factor analyses were also performed to investigate the stability of the factor structure. Only those factors having eigenvalues greater than or equal to one were retained and in all cases clearly confirmed the results of the maximum likelihood extraction. Varimax rotations were performed on the resulting factors prior to interpretation. Second, reliability alpha coefficients were computed for each factor.

Items were retained based on their factor loading from the factor analyses and their item-to-total correlations. Factors were retained based on the interpretability of the factor structure, the

eigenvalues from the factor analyses, and their alpha coefficient. Based on these diagnostic tests and the lack of consistent empirical support for their relevance to delinquency (see reviews, Agnew, 1991b; Akers, 1994), the elements of bonding of commitment and involvement were dropped from the hypothesized model analyzed in the present study. Items were averaged for each construct to obtain summary scores. The diagnostic tests done on all factors are shown in Table 1.

Table 1 about here

Delinquency

The frequency of delinquent behavior was measured with two sets of items. The first set measured behavior over a two month period and used a 4-point scale (1= never, 2 = once or twice, 3 = several times, and 4= very often). The instrument was developed by Nye and Short (1957), and has been used extensively in research on delinquency, with reports of high validity and reliability (see review, Hindelang, Hirschi, & Weis, 1981). Factor analysis of 13 items indicated 2 factors, which were hypothesized to be indicators of delinquent behavior against property and delinquent behavior against persons.

The second measure of delinquent behavior concerned the subjects' history of drug use. The use of marijuana, amphetamines, barbiturates, solvents and alcohol were assessed with a 5-point scale ranging from never (1) to 12 days or more (5). The entire delinquency scale is shown in the Appendix. Scores were averaged to produce an indicator variable. An examination of the observed

variables revealed that delinquency against persons (skewness = 3.12; kurtosis = 11.97), delinquency against property (skewness = 2.212; kurtosis = 5.740), and use of drugs (skewness = 2.40; kurtosis = 7.40) were moderately skewed.

Attachment to parents - Factor analyses verified 8 items (4-point scales) measuring liking for, closeness to, desire to be like, and desire to spend time with (mother and father). Factor analyses of these items clearly showed two factors which were hypothesized to be indicators of attachment to mother and attachment to father.

Beliefs - Factor analyses verified 4 items (5-point scales) measuring beliefs about not paying for activities, paying for all items, stealing, and following all laws. These elements of bonding were adopted from Marcos and Bahr (1988).

Religion - Factor analyses of the 9 items (5-point scales) measuring involvement in church and religious activities indicated two factors which were hypothesized to be indicators of church attendance (i.e., attendance at church and at Sunday school, activity at church) and private religiosity (i.e., time in prayer, Bible study, share joys of faith, share religion, share faith). This was adopted from Woodroof (1985).

Differential Association - Factor analyses verified 7 items (scale: yes vs no) measuring 2 factors indicating peer values (e.g., my group of friends think less of a person who gets into trouble) and peer attributes (e.g., friends of mine get into trouble). (Adopted from Simons, Miller and Aigner, 1980).

Modeling - Factor analyses verified 4 items (4-point scales) that measured the degree to which respondents followed friends in

committing delinquent acts (i.e., stealing, alcohol use, other drugs use, and sex).

Rewards - Factor analyses verified 4 items (4-point scales) measuring perception of whether the rewards of delinquency (i.e., stealing, alcohol use, drug use and sex) outweigh the costs.

Excuses for Crime - Factor analyses verified 6 items (4-point scales) measuring whether delinquency (i.e., stealing, alcohol use, and other drug use) is all right, since it harms no one, or most people do it.

Data Analysis

In this study, the hypothesized structural model (Figure 1) of eight constructs are tested using structural equation modeling (SEM). The computer program LISREL-7, developed by Joreskog and Sorbom (1989), is used to obtain path estimates using maximum likelihood (ML) estimation and to evaluate the overall fit of the model. Structural equation models have several advantages, when used properly, over least-squares regression analysis. Latent variables are assumed to be measured by multiple manifest variables. Variables are not assumed to be measured without error - a major draw back to non-SEM methods. Unlike path analysis, the model is examined in a single stage rather than a multi-stage process. The entire system of relations is tested at once, avoiding the limitation of examining only one link in the system at a time and assuming that findings regarding that link will remain constant when one analyzes subsequent links (see Duncan, 1975).

SEM consists of two sets of equations. The measurement equations relate the observed variables to the latent constructs they

are purported to measure. The structural equations model the relationship between the latent constructs. In addition, error variance and covariance terms are associated with each observed variable and with each structural equation.

In this study, the variance-covariance matrix of the thirteen observed variables was analyzed. Exploratory model building was conducted using a random sample of 503 subjects and the final model was confirmed on the remaining 543 subjects. In the exploratory phase of this analysis, theoretical relationships were always considered first; in addition, estimated goodness of fit measures, t-values, modification indices and residuals were examined to evaluate the model. T-values (univariate Wald test) are the ratio of the parameter estimate and its estimated standard error. T-values < |2| are considered nonsignificant - an indication that the parameter is not different from zero and should not be estimated (i.e., fixed to zero). The modification indices (univariate Lagrangian Multiplier) are computed by LISREL for any parameter set to zero in the current model. This index indicates the minimum amount of reduction that would result in the chi-square estimate were this parameter estimated. There is no single correct way to proceed in this exploratory model building, however, MacCallum (1986) suggests that after a theoretical model is specified, modification can be made one parameter at a time, adding new parameters before deleting others, and focusing on the measurement model before the structural model.

The overall fit of a model was evaluated using the four indices

of the goodness-of-fit: Chi-square (χ^2), Goodness-of-fit index (GFI), normed fit index (NFI), and the standardized root mean squared residuals (RMSR). In addition, three indices of parsimonious goodness of fit (Joreskog's Adjusted goodness-of-fit index (AGFI), Akaike's Information Criterion (AIC), and the parsimonious fit index (PFI)) were used. Joreskog (1989) suggests that rather than treat the χ^2 as a test statistic, the fit of a model should be judged on its size relative to the degrees of freedom. Both the GFI and the AGFI are less affected by sample size (see Bollen, 1989, for a discussion p. 276) and range in value from 0 to 1, with a value closer to 1 indicating a good fit. The RMSR should be near zero in a model that represents the data. To compute the NFI a null model must be estimated. This model specified no common factors and no error variance and resulted in a chi-square of 1459.15 with 78 df. NFI values close to 1 indicate an acceptable model fit.

Although the ML parameter estimates are robust to moderate violation of multivariate normality (Anderson & Gerbing, 1988), the χ^2 statistic may be inflated in this study since it is known that large samples and departures from normality inflate it (Joreskog, 1989; Bentler, 1980). Therefore, the parsimonious goodness of fit indices were also used (Bentler & Bonett, 1980, see Loehlin, 1992, for a discussion p 75). The PFI adjusts the NFI by taking into account the number of degrees of freedom given up (over the null model) and models with larger PFI are better than with low PFI (Loehlin, 1992). The ACI is sensitive to sample size but considers the number of unknowns in the model and generally favors the model with the

fewest unknowns. Nested models were also evaluated with a hierarchical χ^2 test. Small decreases in the goodness-of-fit chi-square statistics between two models relative to the degrees of freedom may indicate that the more restricted model is capitalizing on chance; hence, the more parsimonious model is thought to be correct. (Bentler & Mooijaart, 1989 summarizes Joreskog, 1977).

Results

Figure 1 depicts the initial hypothesized model between 13 observed variables and 4 latent variables. In the first step of the analysis, the factor structure was examined. All latent variables (including observed variables with only 1 indicator) were assumed to be correlated (i.e. each latent variable would have a curved line connecting it to each other latent variable) and the relationship between each observed variable and each latent variable was depicted in Figure 1. Beliefs, Modeling, Reward, and Excuses for Crime were modeled as perfect measures of the latent constructs; that is, their error variances were not estimated. The error variances for the remaining observed variables and the errors associated with the structural equations were estimated, but no error covariances were estimated. The initial model moderately represented the data as indicated by the χ^2 of 80.68 with 41 degrees of freedom ($p = .000$) and other fit measures (GFI = .97, AGFI = .94, RMSR = .023, NFI = .945, PFI = .497, AIC = 180.68). It was hypothesized that the circumstances that would cause errors in the measurement of the delinquent behavior toward people would also affect delinquent behavior toward property, therefore these error covariance for these

measures was estimated. Freeing this parameter improved the fit of the model substantially and was accepted as representative of the data (χ^2 = 63.68, 40 df, p = .010, GFI = .979, AGFI = .953, RMSR = .019, Range of Residuals - 2.9 to 2.8, NFI = .956, PFI = .490, AIC = 165.68, χ^2_{diff} = 17.0 with 1 df). In addition, several estimates of error variance for Beliefs, Modeling, Reward, and Excuses for Crime were modeled, however none improved the fit of the model. Therefore these four measures were modeled as perfect measures for the remaining analysis.

Figure 2 and Tables 2, 3 and 4 about here

In the second step of the exploratory model fitting, a structural model was tested in an effort to explain the correlations among the seven constructs. As Figure 1 indicates, the initial model hypothesized 10 causal paths and one correctional path. The fit of the initial model was moderately good as indicated by the measures of fit (χ^2 = 155.59, 57 df, p = .000, GFI = .953, AGFI = .925, RMSR = .029, Range of Residuals - 3.3 to 4.0, NFI = .893, PFI = .653, AIC = 223.59). All paths were supported by the data except the path from Reward to Delinquency (t-values < 2). Based on theoretic interest and the pattern of standardized residuals, a symmetric non-recursive relationship was tested between Reward and Excuses for Crime (the parameters were freed and constrained to be equal). This addition, in figure 2, showed a significant improvement to the model fit (χ^2 = 128.94, 56 df, p = .000, GFI = .958, AGFI = .932, RMSR = .029, Range of Residuals - 2.9 to 3.9, NFI = .912, PFI = .655, AIC = 198.94, χ^2_{diff} = 26.65 with 1 df). All paths in this final model were supported except

the path from Reward to Delinquency.

Finally, in the confirmatory phase of analysis, the model structure was confirmed using the remaining data (N =543) and path coefficients were estimated. The model was an adequate fit for the data with a χ^2 of 109.52 with 56 df (p = .000, GFI = .967, AGFI = .946, RMSR = .018, Range of Residuals - 3.5 to 3.6, NFI = .925, PFI = .676, AIC = 179.52). In addition, a multiple group fit test was performed in which the structure pattern was hypothesized to be invariant across groups. This hypothesis was accepted (χ^2 = 238.84, 115 df, p = .000, $GFI_{group\ 1}$ = .958, $GFI_{group\ 2}$ = .967, $RMSR_{group\ 1}$ = .029, $RMSR_{group\ 2}$ = .018). Finally, to estimate path coefficients with the most information possible, the final model was fit to the full data set and reported in Figure 2 and Table 2. All path coefficients are statistically significant based on the LISREL t-values (> 2) except the path from Reward to Delinquency.

Discussion

This study of 1,093 public high school students was designed to test an integrated theoretical model of delinquency with LISREL procedures (Bollen, 1989; Joreskog & Sorbom, 1989). The hypothesized model was composed of elements from control and social learning theories (see Akers, 1994). LISREL analyses revealed that the hypothesized model was nearly identical to the final confirmed model. Indeed, attachment to parents and commitment to religion had a positive co-variant relationship, and each of those elements of bonding had a positive association with conventional beliefs. As also hypothesized, conventional beliefs had an inverse

relationship to frequency of delinquent behavior as well as to differential association with delinquent peers. Association with delinquent peers led to modeling their delinquent behavior and to use of excuses for crime, and the latter two elements of social learning increased delinquency.

There was only two differences between the hypothesized and confirmed models: Perception that the rewards of delinquency outweighed the costs was not predictive of frequency of delinquent behavior, and there was a reciprocal relationship between those perceptions and excuses for crime. The failure of perception of rewards of delinquency to predict delinquent behavior may be the result of measures used in the present study. According to Akers (1994: 99), the social learning process is one in which imitation of delinquent models, learned excuses for crime, and anticipation of rewards versus costs initiate delinquency. After initiation, however, actual social and non-social rewards and costs primarily determine repetition of delinquent acts. In an effort to increase the accuracy of self-reports, which rely on recall, the three subscales used in the present study asked respondents to indicate how often they had committed certain acts in the past month (in the cases of alcohol and other drug use) or two months (in the cases of property and person offenses). Hindsight suggests that whereas the measures used probably gave more accurate responses than asking respondents about the total number of offenses that they have ever committed, they may not have been adequate indicators of delinquency during the period of adolescence. And perception of rewards is likely a

better predictor of repetition of delinquent behavior over a longer period of time than surveyed in this study.

Clearly, this study was concerned with frequency of present delinquency and not with criminal patterns or severity of offenses (Smith, Visher & Jarjoura, 1991), nor with recidivism (Benda, 1989; Gottfredson & Tonry, 1987). Other limitations of the study included the use of self-reports, its cross-sectional design, and restricted sampling. This study was based on the assumption that confidentiality and anonymity ensured reasonably accurate self-reports, an assumption that has been supported in prior research (Hindelang, Hirschi & Weis, 1981). However, confirming sources of information and multiple measures would have strengthened the study. Furthermore, longitudinal data would have allowed a better test of causal sequences. Finally, the sample, though relatively large and randomly drawn, consisted of a limited number of public high schools, which may not have been fully representative of all schools in America.

Theoretical Implications

At the same time, the theoretical model confirmed in the present study is very plausible based on logical, as well as empirical, grounds. The sequential order of influences represented in the model is in logical agreement with experiences in life. The elements of bonding of attachment to parents, of commitment to religion, and of forming normative beliefs are largely determined before differential association with adolescent peers (Erikson, 1968; Feldman & Elliott, 1990; Gallatin, 1975). Structurally, the model also

is in theoretical accord with other models tested in the literature (e.g., Agnew, 1991b, 1993; Akers, 1994; Elliott et al., 1985; Gibbons & Krohn, 1991; McGee, 1992; Matsueda & Heimer, 1987; Thornberry et al., 1993). Parents and religion in tandem are the primary socializing agents in society that instill conventional beliefs about right and wrong. And evidence indicates that these beliefs are more readily adopted when there is emotional attachment to agents of socialization (Bandura, 1977; Feldman & Elliott, 1990).

Moreover, there is evidence that beliefs, learned from parents and religion, are the most proximate element of bonding that insulates adolescents from delinquency and association with delinquent peers (see Agnew, 1991b; Marcos & Bahr, 1988; Marcos et al., 1986). Beliefs also represent the greatest conceptual overlap between control and social learning theories (see Agnew, 1991b, 1993; Akers, 1994). In control theory, the concept of "beliefs" refers to moral proscriptions which, if adhered to, constrain natural delinquent impulses. In social learning theory, beliefs are a dimension of the broader concept of "definitions" (see Akers, 1994), which also includes motives, attitudes and values (see Matsueda, 1988; Sutherland, 1947).

Additionally, there is considerable empirical support for the social learning argument (Akers, 1994) that differential association with delinquent peers leads to modeling their unlawful behavior, and to differential reinforcement and excuses favoring the commission of offending acts (see reviews, Akers, 1994; Empey & Stafford, 1991; Gibbons & Krohn, 1991; Matsueda, 1988; Nettler, 1984). The

reciprocal relationship between reinforcement and excuses for crime is very plausible. Rewards of delinquency provide an excuse for delinquent acts and excuses or rationalizations are offered by peers to reinforce unlawful behavior.

The most problematic aspect of the confirmed model, however, is that it is composed of two theories, albeit they share some similar assumptions and concepts, that have contradictory assumptions (see Akers, 1994; Benda & DiBlasio, 1991; Gibbons & Krohn, 1991). For example, aside from sharing the concept of beliefs, both theories assume that delinquency results from variation in socialization and from perception of the rewards and costs of unlawful acts (see Elliott et al., 1985). However, control theory rests on the Hobbesian assumption of natural delinquent impulses, which are restrained by bonding to parents, who represent the primary socializing agents of society (Empey & Stafford, 1991). Implicit in control theory is the assumption that the only sources of bonding and socialization are conventional groups, primarily the family. By contrast, social learning theory rests on the foundational assumption that all behavior is learned (and is not natural or innate), and is learned from both conventional and delinquent groups. In the latter theory, it is variation in the content of socialization that explains delinquency, whereas in control theory it is variation in the adequacy of socialization (see Nettler, 1984).

These contradictions (and others) in basic assumptions have led critics (e.g., Hirschi, 1979) to argue that it is premature to attempt to integrate theories, and that what passes for theoretical integration

is in reality a conceptual quagmire of ignored incompatibilities (also, see Gottfredson & Hirschi, 1990). However, the authors argue that both theories studied are necessary, but not sufficient, to explaining delinquency, and that these theories identify crucial pieces of a larger puzzle that has yet to be revealed in criminological investigation. Succinctly stated, existing integrated theoretical models (see reviews, Akers, 1994; Gibbons & Krohn, 1991) contain obvious gaps in explaining delinquent behavior (see Kaplan, 1964). The fact that the preeminent theories used to construct these models have contradictory assumptions does not per se mean that both theories cannot be merged into a more complete explanatory model. Instead, the current state of knowledge suggests that the theories studied identify two distinct processes leading to delinquency, which may or may not be interrelated. For example, it is compelling to theorize that weak bonding simply frees adolescents of restraint on peer associations that encourage delinquent behavior. Instead of "causing" differential association with delinquent peers, affiliation with those peers may simply occur because of a natural desire for bonding that was unfulfilled in the familial context (see Feldman & Elliott, 1990). Certainly, many delinquents report a deep desire for bonding, however transitory and immature, to peers as an alternative to familial bonding (Walters, 1994).

This particular example of integrating two theories that seemingly contradict each other would require a softening of the control assumptions of an invariant natural, especially innate,

motivation toward delinquency and of only conventional sources of socialization. Both assumptions, in fact, have been relaxed or dismissed in recent years because of evidence that indicates that an invariant natural motivation toward delinquent acts is untenable (see Elliott et al., 1985; Kornhauser, 1978), and clearly adolescents receive socialization from criminal peers and adults as well as from more conventional sources (see Agnew, 1993; Akers, 1994; Walters, 1994). On the other hand, weak bonding to parents offers a more complete understanding of why adolescents differentially associate with delinquent peers than does social learning theory (see Patterson & Dishion, 1985).

The concluding point is that both preeminent theories studied, albeit containing apparent contradictory assumptions, explain significant variance in delinquent behavior independent of the other theory (e.g., Empey & Stafford, 1991; Gibbons & Krohn, 1991), and so offer important elements to the explanation of that behavior independent of the other theory (e.g., Empey & Stafford, 1991; Gibbons & Krohn, 1991). Hence, rather than forcing a premature foreclosure on one or the other of these theories, further conceptual work should be done to reconcile contradictions. The idea that the two theories identify potentially unrelated process which result from an underlying natural desire for bonding (e.g., emotional closeness, sense of belonging) would seem to merit attention in future conceptualization.

Practice Implications

Discussion of the vast array of interventions needed to address

the different types of problems associated with delinquency is beyond the scope of an article on testing a theoretical model (see Schwendinger & Schwendinger, 1993, Palmer, 1992). Moreover, the model tested is limited to familial, religious and peer influences and does not include measures of historical and sociopolitical forces that converge upon these influences (see Empey & Stafford, 1991; Gibbons & Krohn, 1991; Nettler, 1984). Finally, since the present study and others found in the literature (see reviews, Elliott et al., 1985; Gibbons & Krohn, 1991) indicate that parental attachment and religion are more indirect and distant influences, this discussion emphasizes interventions aimed at direct influences.

However, prevention efforts need to be directed at the family, since it is typically the first and primary socializing agent of society. Also, considerable evidence has been garnered to show that familial conflict (Van Voochis, Cullen, Mathers & Garner, 1988), weak attachment (Walters, 1994), poor parenting skills (McCord, 1988; Wells & Rankin, 1988), and parental rejection (Simons, Conger & Whitbeck, 1988; Simons & Robertson, 1989; Simons, Robertson & Downs, 1989) lead to delinquency and association with delinquent peers. Patterson (1982, 1986; Patterson & Dishion, 1985) theorizes that coercive interactional patterns, learned from parents, along with rejection from socially skilled peers, leads to a drift toward delinquent associations and delinquency (see Simons, Whitbeck, Conger & Conger, 1991). Taken together, this body of evidence indicates that there needs to be a renewed commitment to providing resources to strengthen families and to teach more effective

parenting from the social service community and the church (Empey & Stafford, 1991; Palmer, 1992).

To address more immediate influences on delinquency, this study and others (see review, Walters, 1994) indicate that peer association (i.e., primarily modeling and reinforcement of excuses for crime) and cognitions (i.e., beliefs and excuses for crime) must be the primary focus of intervention. According to social learning theory (Akers, 1994), modeling or imitation of peer behavior initiates delinquency. This means that removal from delinquent peer associations is usually necessary while the person receives outpatient or residential treatment. These associations need to be supplanted with more prosocial ones as quickly as possible (Cusson & Pinsonneault, 1986). Typically, this means teaching social skills and other competence enhancement skills so the person can effectively respond to new opportunities, including peer associations (see Walters, 1994). Research also confirms that impulsivity and low frustration tolerance (Agnew, 1993) are prognostic of delinquency, and that delinquents generally apportion less weight to costs than to rewards of unlawful acts because costs tend to be perceived as less immediate (Mischel, 1974). Behavioral treatments can raise frustration tolerance and increase ability to defer gratification (see Nettler, 1984; Walters, 1994).

The findings of this study in tandem with other research (see reviews, Akers, 1994; Walters, 1994) indicate that cognitions in the form of beliefs and excuses for behavior that is contrary to those beliefs are critical influences on delinquency. This evidence supports

Akers (1994) incorporation of techniques of neutralization (Sykes & Matza, 1957) or excuses for crime into social learning theory (see Matsueda, 1988). Sykes and Matza posit that delinquents have the same moral proscriptions as other adolescents, and that delinquents commonly use five types of excuses that provide episodic release from these proscriptions: (a) denial of responsibility (e.g., I was drunk), (b) denial of injury (e.g., they can afford the loss), (c) denial of victim (e.g., they invited sexual assault), (d) condemning the condemners (e.g., even the police are corrupt), and (e) appeal to higher loyalties (e.g., my friends count on me).

To this list of commonly used excuses, Walters (1994) has added many others that also are amenable to self-regulation (Miller, 1991), cognitive reframing (Alexander, Waldron, Barton & Mas, 1989), and cognitive restructuring (Walters, 1994). These cognitive interventions assume that behavior is, in large part, a product of cognitions and that persons can chose to think differently (see Beck, 1976). Three decades ago, Matza (1964) criticized "positive theories" of delinquency (see Gottfredson & Hirschi, 1987) for their mechanistic statements of "cause and effect," overlooking the high degree of choice represented in delinquent behavior. Choice is likely a major reason that theoretical factors explain only a modest to moderate amount of variance in delinquency and fail to predict future criminal behavior well (see Gottfredson & Tonry, 1987). The legacy of positivistic explanations of delinquency (see Empey & Stafford, 1991) is reflected in the overemphasis on "causes" in programmatic interventions (see Palmer, 1992). Yet, making

delinquents aware of their thinking and choices is requisite to overcoming predisposing factors identified in theories of delinquency (see Walters, 1994). Indeed, delinquents must become aware that they are making choices that bring consequences and that they can make different choices that yield more desirable outcomes.

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Appendix

Delinquency Scales

In the past two months, how often have you:*

Property Offenses

Taken little things (worth $5 or less) that didn't belong to you.

Damaged public or private property.

Taken something worth $50 or more that didn't bleong to you.

Taken something worth between $5 and $50 that didn't belong to you.

Person Offenses

Beat up on other kids or adults just for the heck of it.

Participated in gang fights.

Used force to get money from another person.

Drug Use**

How often in the past 30 days have you used:***

Marijuana

Amphetamine

Barbiturates

Solvents

Alcohol

Note: *It should be noted that the scale for all property and person offenses was: 1) never 2) once or twice 3) several times and 4) very often. ** The scale for all drugs was: 1) none 2) 1 or 2 days 3) 4 to 7 days 4) 8 to 11 days 5) 12 days or more. ***There were examples of each class of drugs such as Ritalin, speed, Methedrine for amphetamine.

Table 1

Diagnostic Details

Variable	Number of Items	Mean	Standard Deviation	Skewness	Kurtosis	Alpha	Corrected Item-Total Correlation Range	Factor Loading Range
Attachment								
Attachment to Father	4	2.31	0.93	0.42	-0.98	.90	.70-.82	.72-.88[a]
Attachment to Mother	4	1.95	0.78	0.80	-0.06	.87	.63-.81	.65-.87[a]
Religion								
Church Attendance	3	3.53	0.99	-0.50	-0.44	.83	.65-.74	.65-.77[a]
Religiosity	5	3.38	1.31	-0.32	-1.19	.85	.61-.72	.54-.76[a]
Belief	4	1.94	0.81	0.97	0.84	.78	.56-.62	.76-.81
Differential Association								
Peer Values	3	1.59	0.34	-0.44	-0.95	.61	.31-.50	.39-.73[a]
Peer Attributes	3	1.17	0.26	1.37	1.19	.54	.32-.41	.45-.64[a]
Model	4	1.57	0.60	1.25	1.99	.74	.48-.63	.58-.76
Reward	4	1.74	0.70	1.00	0.57	.77	.47-.62	.50-.78
Excuses	4	1.38	0.51	1.57	3.05	.77	.54-.63	.62-.71
Delinquency								
Property	4	1.33	0.48	2.16	5.51	.80	.57-.75	.49-.86[a]
Person	3	1.19	0.42	3.12	11.97	.74	.55-.61	.52-.61[a]
Drug Offenses	5	1.43	0.67	2.40	6.61	.73	.43-.60	.46-.72

[a] ML estimated, rotated varimax factor loadings

Table 2

Maximum Likelihood Parameter Estimates and Standard Errors

	Coefficient	(SE)
Measurement Model		
Attachment/Mother to Attachment	1.00[a]	
Attachment/Father to Attachment	.88	(.13)
Church Attendance to Religion	1.00[a]	
Religiosity to Religion	.11	(.11)
Peer Values to Differential Association	1.00[a]	
Peer Attitudes to Differential Association	.62	(.06)
Property to Delinquency	1.00[a]	
Person to Delinquency	.64	(.04)
Drugs to Delinquency	1.06	(.08)
Structural Model		
Attachment to Parents to Beliefs	.72	(.12)
Religion to Beliefs	.20	(.04)
Beliefs to Differential Association	.20	(.01)
Beliefs to Delinquency	.23	(.02)
Differential Association to Modeling	1.43	(.13)
Differential Association to Rewards	1.58	(.16)
Differential Association to Excuses for Crime	1.54	(.12)
Rewards to Excuses for Crime	.13[b]	(.02)[b]
Excuses for Crime to Rewards	.13[b]	(.02)[b]
Modeling to Delinquency	.09	(.02)
Excuses for Crime to Delinquency	.21	(.03)

unstandardized estimates [a] constrained to be 1.0 [b] constrained to be equal

Table 3

Maximum Likelihood Estimates of Squared Multiple Correlations and Variance/Covariance of Error

	Coefficient	(SE)	R^2
Variance/Covariance of Measurement Errors			
Attachment to Mother	.44	(.05)	.26
Attachment to Father	.65	(.03)	.29
Church Attendance	.25	(.07)	.75
Religiosity	.81	(.09)	.53
Peer Values	.68	(.01)	.30
Peer Attributes	.05	(.01)	.20
Property	.12	(.01)	.49
Person	.13	(.01)	.26
Drugs	.32	(.02)	.29
Property with Person	.04	(.01)	—
Disturbance Terms in Structural Equations			
Beliefs	.48	(.03)	.29
Differential Association	.01	(.01)	.70
Modeling	.29	(.01)	.20
Rewards	.36	(.02)	.27
Excuses for Crime	.15	(.01)	.45
Delinquency	.03	(.01)	.71

unstandardized estimates

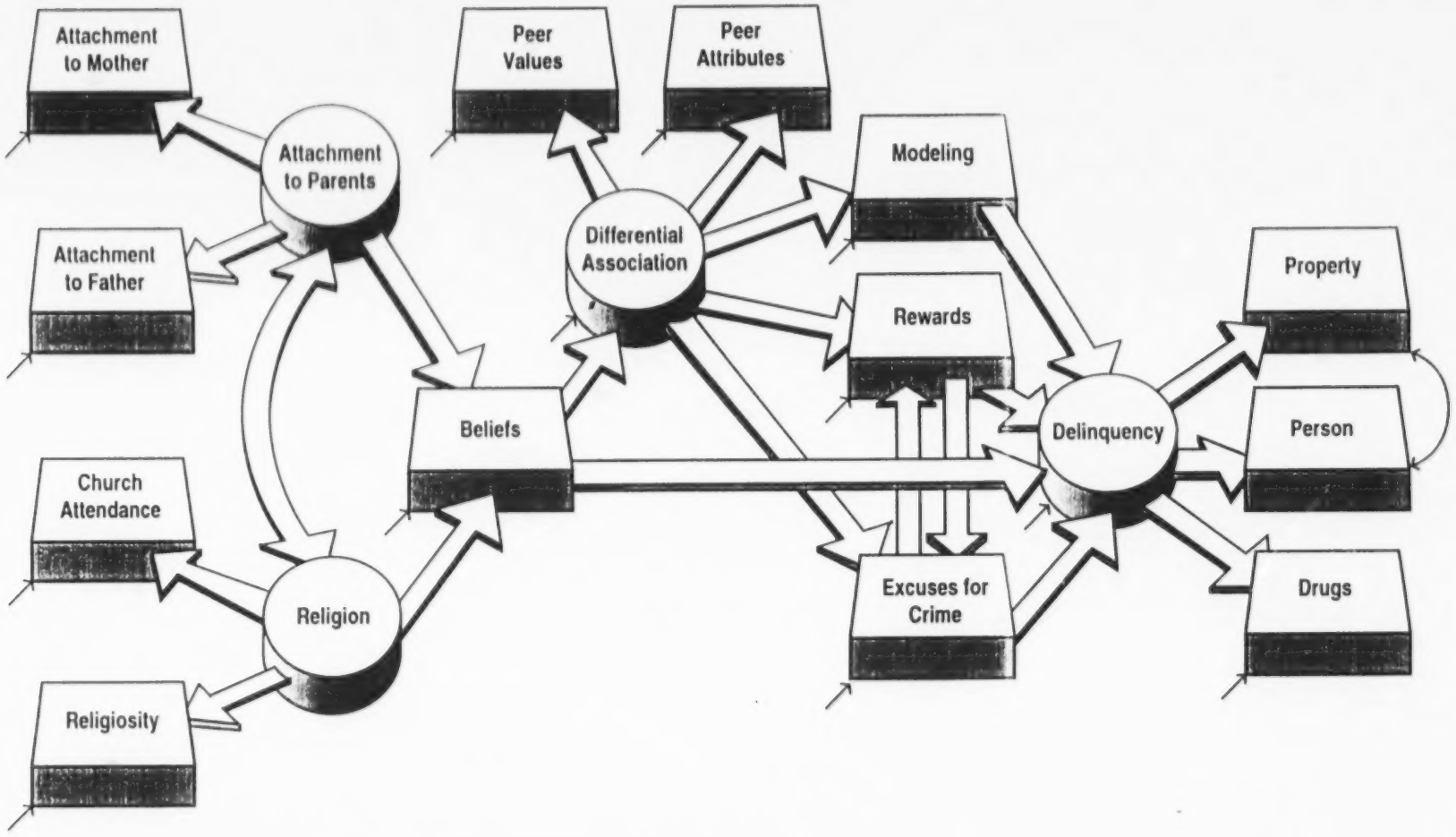
Table 4

Correlation Matrix of Latent Variables

Beliefs	.666							
Differential Association	.129	.036						
Modeling	.184	.051	.364					
Rewards	.233	.064	.092	.489				
Excuses for Crime	.228	.063	.090	.180	.269			
Delinquency	.216	.047	.093	.099	.117	.116		
Attachment to Parents	.194	.038	.054	.068	.066	.063	.230	
Religion	.252	.049	.070	.088	.086	.082	.142	.751

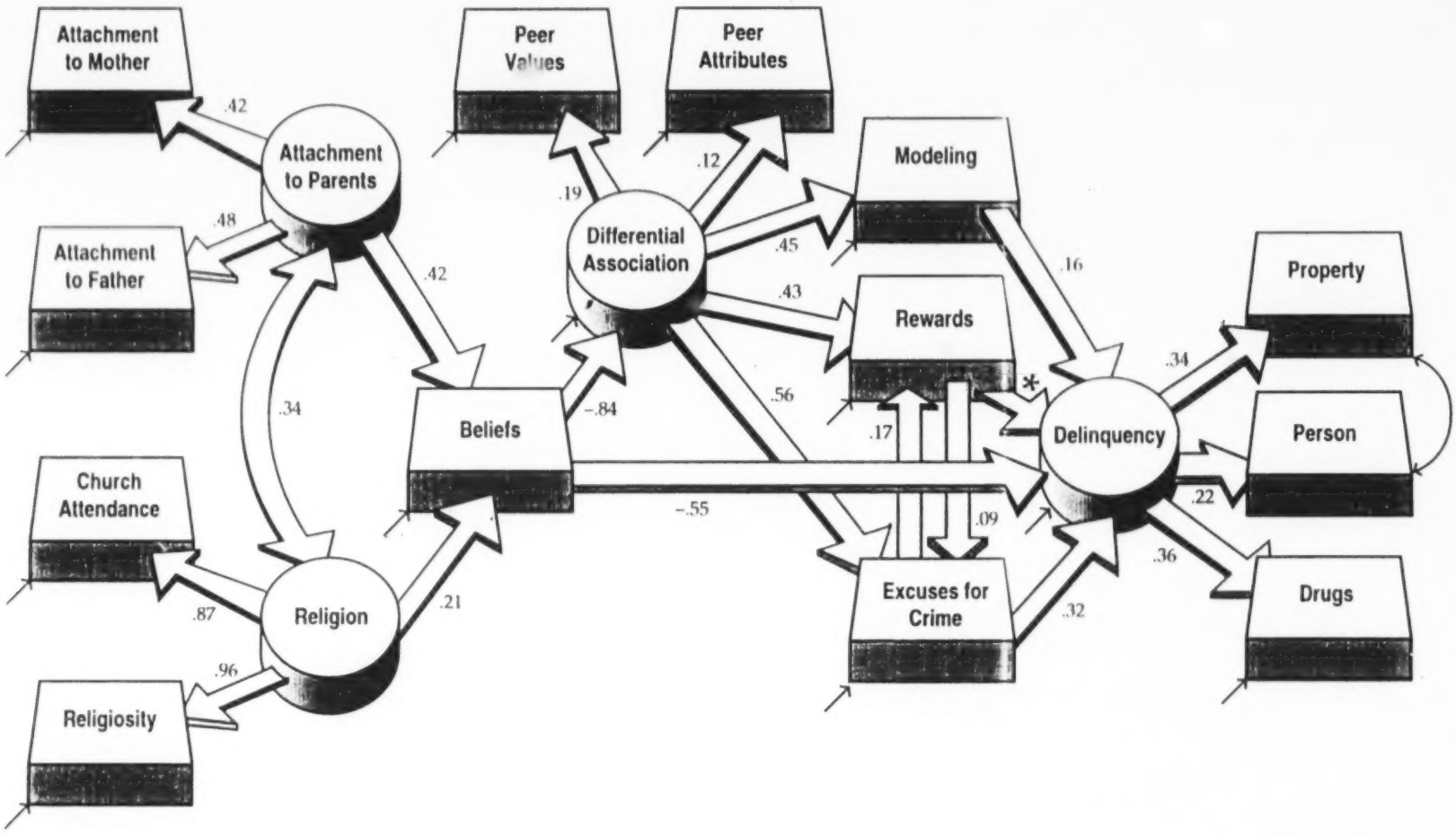
Note: Unstandardized estimates

Figure 1. Hypothesized Model



Note: Boxes represent observed variables, circles represent unobserved (latent) variables.
Curved paths represent correlational relationships; paths with arrows represent causal relationships.
Small arrows represent error variance or covariance

Figure 2. Final Confirmed Model



Note: Asterisk represents a relationship which is not significant. Shown are standardized coefficients.
Boxes represent observed variables, circles represent unobserved (latent) variables.
Curved paths represent correlational relationships; paths with arrows represent causal relationships.
Small arrows represent error variance or covariance